

Amendments to the Claims:

The following list of claims replaces all prior versions and lists of claims in the application.

Listing of Claims:

1. (currently amended) An apparatus for capturing an analyte comprising:
 - an electrophoresis cassette ~~including~~comprising:
 - a base ~~having~~comprising a pair of electrode channels, a barrier interposed between the electrode channels, the barrier ~~having~~comprising at least one migration channel extending between the electrode channels, an enlarged slot ~~bounded-adjacent to~~ and opening into the migration channel;
 - a first electrode extending in the first electrode channel; and
 - a second electrode extending in the second electrode channel; and
 - a capture gel holder receivable in the enlarged slot, the capture gel holder ~~having~~comprising an opening aligned with the migration channel.
2. (currently amended) The apparatus of claim 1 wherein the barrier ~~has~~comprises a second enlarged slot ~~bounded-adjacent to~~ and opening into the migration channel for receiving the capture gel holder.
3. (currently amended) The apparatus of claim 2 further comprising an evaporation cover for overlying the electrophoresis cassette, the evaporation cover ~~having~~comprising at least one opening for the capture gel holder and at least one opening for venting of gas.
4. (currently amended) The apparatus of claim 3 wherein the electrophoresis cassette ~~includes~~comprises at least one wash well.

5. (previously presented) The apparatus of claim 3 wherein at least one of the electrodes has a pair of terminals that extend through the evaporation cover and are flush with the top of the evaporation cover.
6. (currently amended) The apparatus of claim 3 wherein the capture gel holder ~~has~~comprises a plurality of teeth, each tooth ~~having~~comprising an opening for receiving non-conductive polymeric mesh and the teeth ~~having~~comprising a polarity device so that the teeth fit in the enlarged slot of the electrophoresis cassette in a ~~certain manner~~selected orientation.
7. (currently amended) The apparatus of claim 4 wherein the gel capture holder ~~has~~comprises a plurality of teeth, each tooth ~~having~~comprising an opening for receiving non-conductive polymeric mesh and the teeth ~~having~~comprising a polarity device so that the teeth fit through the at least one opening of the evaporation cover.
8. (currently amended) An apparatus for capturing an analyte comprising:
- an electrophoresis cassette ~~including~~comprising:
 - a base ~~having~~comprising a pair of electrode channels, a barrier interposed between the electrode channels, the barrier ~~having~~comprising at least one migration channel extending between the electrode channels, an enlarged slot ~~bounded adjacent to~~ and opening into the migration channel;
 - a first electrode extending in the first electrode channel; and
 - a second electrode extending in the second electrode channel;
 - a capture gel holder receivable in the enlarged slot, the capture gel holder ~~having~~comprising an opening aligned with the migration channel; and
 - a thin gel carried in the opening of the capture gel holder, the thin gel ~~having~~comprising a gel matrix and a ligand covalently bound to the gel matrix.

9. (currently amended) The apparatus of claim 8 wherein the thin gel further ~~comprising~~comprises a non-conductive polymeric mesh for linking with the gel matrix.
10. (currently amended) The apparatus of claim 9 wherein the barrier ~~has~~comprises a second enlarged slot ~~bounded~~adjacent to and opening into the migration channel for receiving the capture gel holder.
11. (previously presented) The apparatus of claim 10 further comprising an evaporation cover for overlying the electrophoresis cassette, the evaporation cover having at least one opening for the capture gel holder and at least one opening for venting of gas.
12. (currently amended) The apparatus of claim 11 wherein the electrophoresis cassette ~~includes~~comprises at least one wash well.
13. (currently amended) The apparatus of claim 11 wherein at least one of the electrodes ~~has~~comprises a pair of terminals that extend through the evaporation cover and are flush with the top of the evaporation cover.
14. (currently amended) The apparatus of claim 11 wherein the capture gel holder ~~has~~comprises a plurality of teeth, each tooth ~~having~~comprising an opening for receiving non-conductive polymeric mesh and the teeth ~~having~~comprising a polarity device so that the teeth fit in the enlarged slot of the electrophoresis cassette in a ~~certain manner~~selected orientation.
15. (previously presented) The apparatus of claim 14 wherein the capture gel holder further comprises a detection surface.
16. (currently amended) The apparatus of claim 11 wherein the gel capture holder ~~has~~comprises a plurality of teeth, each tooth ~~having~~comprising an opening for receiving non-conductive polymeric mesh and the teeth ~~having~~comprising a polarity device so that the teeth fit through the at least one opening of the evaporation cover.

17. (currently amended) A capture gel holder comprising:

a handle;

a plurality of teeth projecting from the handle, at least one of the teeth

~~having~~comprising a bore through the tooth; and

a gel matrix and a ligand covalently bound to the gel matrix overlying the bore.

18. (currently amended) The capture gel holder of claim 17 wherein at least one tooth

~~having~~comprises a keyed shaped ~~therein~~ adapted to fit in the electrophoresis cassette in

only in a specific direction.

19. (currently amended) The capture gel holder of claim 18 wherein each of the teeth

~~has~~comprises a recessed central region around the bore and a flange on the bore and

wherein the recessed region and the flange are ~~to~~capable of facilitating ~~facilitate~~ the release of gas.

20. (previously presented) The capture gel holder of claim 19 further comprising a non-

conductive polymeric material overlying each bore of the teeth and for supporting the gel matrix and ligand.

21. (currently amended) The capture gel holder of claim 20 wherein the keyed shape includes

each tooth having a curved edge and a flat edge adapted to ~~be~~-fit in the electrophoresis cassette only in a specific direction.

22. (previously presented) The capture gel holder of claim 21 wherein the keyed shape includes

one tooth having a protrusion adapted to pass through only a specific slot in an evaporative cover of an electrophoresis cassette.

23. (previously presented) The apparatus of claim 21 wherein the capture gel holder further

comprises a detection surface.

24. (previously presented) The apparatus of claim 20 wherein the keyed shape includes one tooth having a protrusion adapted to pass through only a specific slot in an evaporative cover of an electrophoresis cassette.
25. (withdrawn) A thin gel for capturing an analyte by electrophoresis comprising:
a gel matrix and a ligand covalently bound to the gel matrix.
26. (withdrawn) The thin gel of claim 25 wherein the gel matrix has a tensile strength sufficient to allow removal from the electrophoresis device.
27. (withdrawn) The thin gel of claim 25 further comprising a non-conductive polymeric material.
28. (withdrawn) The thin gel of claim 27 wherein the non-conductive polymeric material is selected from the group consisting of a mesh, a mat, a woven fabric, and a felt.
29. (withdrawn) The thin gel of claim 27 wherein the non-conductive polymeric material is a polymer capable of cross-linking the gel matrix.
30. (currently amended) An apparatus for capturing an analyte, the apparatus comprising:
a non-conductive polymeric material for supporting a gel matrix and a ligand
covalently bound to the gel matrix.
31. (cancelled)
32. (currently amended) The apparatus of claim ~~31~~30 further comprising a capture gel holder ~~having~~comprising a plurality of openings for receiving the non-conductive polymeric material.
33. (currently amended) The apparatus of claim 32 further comprising an electrophoresis cassette for receiving a gel for electrophoresis and capturing an analyte, the electrophoresis cassette ~~includes~~comprising

a base ~~having~~comprising a pair of electrode channels, ~~and~~ a barrier interposed between the electrode channels, the barrier ~~having~~comprising at least one migration channel extending between the electrode channels, ~~and~~ an enlarged slot ~~bounded~~adjacent to and opening into the migration channel for receiving the capture gel holder;

a first electrode extending in the first electrode channel; and

a second electrode extending in the second electrode channel.

34. (currently amended) The apparatus of claim 33 wherein the barrier ~~has~~comprises a second enlarged slot ~~bounded~~adjacent to and opening into the migration channel for receiving the capture gel holder.

35. (currently amended) A method of capturing a target molecule contained in a sample, the method comprising the steps of:

providing a non-conductive polymeric material ~~having~~supporting a gel matrix comprising a covalently bound ligand specific for the target molecule; and

passing the sample through the non-conductive polymeric material ~~having~~supporting the gel matrix such that the target molecule is captured by the capture probe of the gel matrix and the remainder of the sample passes through the non-conductive polymeric material.

36. (previously presented) The method of claim 35 wherein the target molecule is detectably labeled prior to passing the sample through the gel matrix.

37. (currently amended) The method of capturing of the target molecule of claim ~~29~~35 further comprising the steps of:

providing an electrophoresis cassette ~~having~~comprising a migration channel
extending between a pair of electrode channels, each ~~having~~comprising an electrode;
providing an electrophoretic matrix in the electrophoresis cassette and forming a
sample-well to receive the sample within the migration channel;
inserting the non-conductive polymeric material ~~having~~supporting the gel matrix
comprising the covalently bound ligand which is carried by a capture gel holder into the
migration channel by placing the capture gel holder into an enlarged slot which ~~bounds~~is
adjacent to and opens into the migration channel;
inserting the sample with the target molecule in the sample well; and
passing a voltage in the electrophoresis cassette to cause the sample to migrate in
the channel from the sample well towards the non-conductive polymeric material.

38. (previously presented) The method of claim 37 further comprising the steps of:

removing the capture gel holder from the electrophoresis cassette; and
placing the capture gel holder in a reader to detect a probe associated with the
analyte.

39. (currently amended) The method of claim 38 wherein the electrophoresis cassette

~~has~~comprises a second enlarged slot for a respective migration channel for receiving the
capture gel holder.

40. (previously presented) The method of claim 37 further comprising the steps of:

removing the capture gel holder from the electrophoresis cassette; and
subjecting the capture gel holder to conditions sufficient to break the bond
between the capture probe and the target molecule.

41. (currently amended) The method of claim 40 wherein the electrophoresis cassette

~~has~~comprises a second enlarged slot for a respective migration channel for receiving the capture gel holder.

42. (currently amended) A method of detecting a target molecule comprising the steps of:

providing a capture gel holder ~~having~~comprising a non-conductive polymeric material ~~having~~supporting a gel matrix comprising a covalently bound ligand;

providing an electrophoresis cassette ~~having~~comprising a migration channel extending between a pair of electrodes and a sample well to receive the sample within the migration channel and a pair of enlarged slots ~~bounding~~adjacent to and opening into the migration channel;

inserting the sample with the target molecule in the sample well;

inserting the capture gel holder into one of the pair of enlarged slots in the migration channel;

passing a voltage in the electrophoresis cassette to cause the sample to migrate in the migration channel from the sample well towards the non-conductive polymeric material;

removing the capture gel holder from the electrophoresis cassette; and

placing the capture gel holder in a reader to detect a probe associated with the analyte.

43. (previously presented) The method of claim 42 further comprising the steps of:

preparing the sample including having a reporter probe to adhere to the target molecule;

stopping the voltage in the electrophoresis cassette;

moving the capture gel holder to a wash station

inserting the capture gel holder into the other enlarged slot in the migration channel; and

passing a voltage through the electrophoretic matrix in the electrophoresis cassette to cause the sample to migrate in the channel from the sample well away from the capture gel holder and the non-conductive polymeric material.

44. (currently amended) A method for performing an analyte ligand binding assay, said method comprising the steps of:

a.) providing an electrophoresis cassette ~~having~~comprising

a base unit ~~having~~comprising a pair of electrode channels, a barrier interposed between the electrode channels, the barrier ~~having~~comprising at least one migration channel extending between the electrode channels, ~~[[;]] and an enlarged slot bounded adjacent to~~ and opening into the migration channel for receiving the capture gel holder;

a first electrode extending in the first electrode channel;

a second electrode extending in the second electrode channel;

a sample-well forming comb ~~removable~~removably seated in the migration channel; and

a thin gel ~~having~~comprising a gel matrix and a ligand covalently bound to the gel matrix and placed in the migration channel;

b.) filling the apparatus with a gel for electrophoresis;

c.) allowing the gel to solidify;

d.) removing the comb to thereby create a sample well;

- e.) placing a sample in the sample well;
- f.) providing an electromotive force; and
- g.) moving the sample through said thin gel with said electromotive force.

45. (currently amended) The method of claim 44 further ~~including~~comprising the step of providing a detection probe in said sample well.

46. (currently amended) The method of claim 44 further ~~including~~comprising the steps of: g.) removing said thin gel from said apparatus and h.) detecting the presence or absence of said detection probe.

47. (currently amended) The method of claim 46 further ~~including~~comprising the step of washing said thin gel between steps g.) and h.).

48. (currently amended) An apparatus for capturing a target molecular comprising:

a housing ~~having~~comprising:

a base ~~having~~comprising a first electrode channel~~[[,]]~~ and a second electrode channel, a barrier interposed between the first electrode channels and the second electrode channel, the barrier ~~having~~comprising at least one migration channel extending between the first electrode channels and the second electrode channel, an enlarged slot

~~bounded adjacent to~~ and opening into ~~[[a]]~~the migration channel;

a slot, the capture gel holder ~~having~~comprising an opening aligned with the migration channel; and

a gel carried in the opening of the capture gel holder, the thin gel ~~having~~comprising a gel matrix and a ligand covalently bound to the gel matrix.

49. (previously presented) The apparatus of claim 48, wherein said apparatus further comprises a first electrode extending in the first electrode channel and a second electrode extending in the second electrode channel.
50. (previously presented) The apparatus of claim 48 wherein the gel further comprises a non-conductive polymeric mesh for linking with the gel matrix.
51. (currently amended) The apparatus of claim 50 wherein the barrier ~~has~~comprises a second enlarged slot ~~bounded by~~adjacent to and opening into the migration channel for receiving the capture gel holder.
52. (currently amended) The apparatus of claim 51 further comprising an evaporation cover for overlying the ~~electrophoresis cassette~~housing, the evaporation cover having at least one opening for the capture gel holder and at least one opening for venting of gas.
53. (currently amended) The apparatus of claim 52 wherein the ~~electrophoresis cassette~~housing ~~includes~~comprises at least one wash well.
54. (currently amended) The apparatus of claim 52 wherein at least one of the electrodes ~~has~~comprises a pair of terminals that extend through the evaporation cover and are flush with the top of the evaporation cover.
55. (currently amended) The apparatus of claim 52 wherein the capture gel holder ~~has~~comprises a plurality of teeth, the teeth ~~having~~comprising a polarity device so that the teeth fit in the enlarged slot of the ~~electrophoresis cassette~~housing in a ~~certain manner~~selected orientation.
56. (currently amended) A capture gel holder comprising:
a handle;

a plurality of teeth projecting from the handle, at least one of the teeth ~~having~~comprising
a bore through the tooth; and
a gel matrix overlying the bore.

57. (currently amended) The capture gel holder of claim 56 wherein at least one tooth
~~has~~comprises a keyed ~~shape~~shaped to permit placement therein adapted to fit in the
electrophoresis cassette ~~in~~ only in a specific direction.

58. (currently amended) The capture gel holder of claim 57 wherein each of the teeth
~~has~~comprises a recessed central region around the bore and a flange on the bore and
wherein the recessed region and the flange are capable of facilitating release of gas.

59. (previously presented) The capture gel holder of claim 58 further comprising a non-
conductive polymeric material overlying each bore of the teeth and for supporting the gel
matrix and ligand.

60. (currently amended) The capture gel holder of claim 59 wherein the keyed shape includes
each tooth having a curved edge and a flat edge adapted to ~~be~~ fit in the electrophoresis
cassette only in a specific direction.

61. (previously presented) The capture gel holder of claim 60 wherein the keyed shape includes
one tooth having a protrusion adapted to pass through only a specific slot in an
evaporative cover of an electrophoresis cassette.

62. (previously presented) The apparatus of claim 60 wherein the capture gel holder further
comprises a detection surface.

63. (previously presented) The apparatus of claim 59 wherein the keyed shape includes one tooth
having a protrusion adapted to pass through only a specific slot in an evaporative cover of
an electrophoresis cassette.

64. (withdrawn) A gel for capturing an analyte by electrophoresis comprising:
a gel matrix and a ligand covalently bound to the gel matrix.
65. (withdrawn) The gel of claim 64 wherein the gel matrix has a tensile strength sufficient to
allow removal from the electrophoresis device.
66. (withdrawn) The gel of claim 64 further comprising a non-conductive polymeric material.

Amendments to the Drawings:

The attached drawing sheet includes changes to Figure 3. This sheet, which includes Figure 3, replaces the original informal sheet including Figure 3. In Figure 3, a second electrode 202 is added. Applicants enclose a marked-up copy of Figure 3 entitled “Annotated Marked-up Drawings” with the proposed changes shown in red.

Attachment: Annotated Sheet Showing Changes